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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

MMB Docket No. 1671-0275

J&J Reference: **DEP5152USNP**

Group Art Unit: **3738**

Application of: **Barnett et al.**

Examiner: **Bruce Edward Snow**

Serial No. **10/675,064**

Filed: **September 30, 2003**

Title: **Modular Long Bone Prosthesis for Partial or Total Bone Replacement**

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November 3, 2006

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**LETTER**

Sir:

In response to the Notification of Non-Compliant Appeal Brief mailed October 3, 2006, please find an Amended Appeal Brief in connection with the above-identified patent application. Note that in a teleconference today with Bridget C. Monroe (Patent Appeals Specialist), Ms. Monroe indicated that an indication of canceled claims should be presented in Section 3 (Status of Claims) part of the Amended Appeal Brief. Further, Ms. Monroe indicated that the last sentence of paragraph 10 in the Notification should be ignored because no claims have been "withdrawn" in the above-identified patent application.

Please provide any extensions of time which may be necessary and charge any fees which may be due to Account No. 13-0014, but not to include any payment of issue fees.

Respectfully submitted,

MAGINOT, MOORE & BECK LLP

November 3, 2006  
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Date of Signature

**AMENDED APPEAL BRIEF**

Mail Stop Appeal Brief – Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This is an appeal to the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office from the rejection of the claims 21, 23-27 and 32-34 of the above-identified patent application. These claims have

been rejected in a Final Office Action dated January 19, 2006. The \$500.00 fee required under 37 CFR § 1.17(c) was previously submitted. Also, please provide any extensions of time that may be necessary and charge any fees that may be due to Deposit Account No. 13-0014, but not to include any payment of issue fees.

**(1) REAL PARTY IN INTEREST**

DePuy Products, Inc. of Warsaw, Indiana is the assignee of this patent application, and the real party in interest.

**(2) RELATED APPEALS AND INTERFERENCES**

None.

### **(3) STATUS OF CLAIMS**

Claims 1-11, 14-16, and 18-20 have been canceled.

Claims 12, 13, and 17 are allowed.

Claims 23 and 24 were indicated to be allowable if rewritten to overcome the rejection under 35 U.S.C. § 112 set forth in the Final Office Action, and to include all of the limitations of the base claim and any intervening claims.

Claims 21-34 are finally rejected.

Claims 21, 23-27 and 32-34 are being appealed.

Claims 22, 28-31 are not being appealed.

Each of pending claims 12, 13, 17, and 21-34 is shown in the Claim Appendix attached to this Appeal Brief.

#### **(4) STATUS OF AMENDMENTS**

Appellants have filed no amendments subsequent to the final rejection contained in the Office Action mailed January 19, 2006.

## **(5) SUMMARY OF CLAIMED SUBJECT MATTER**

### Claim 21

A first aspect of Appellants' invention relates to a modular long bone prosthesis 20. (See, e.g., Appellants' specification at page 9, lines 9-10; and Figs. 1-2.) The modular long bone prosthesis 20 includes a proximal component 22 having a first coupler 66 at a proximal end thereof and a second coupler 59 at a distal end thereof. (See, e.g., Appellants' specification at page 9, lines 10-14; page 10, lines 17-19; page 17, lines 10-22; and Figs. 1-3 and 7-8.) The modular long bone prosthesis 20 further includes a retroversion component 24 having third coupler 82 at a proximal end thereof and a fourth coupler 84 at a distal end thereof, the third coupler 82 being configured to mate with the second coupler 59 of the proximal component 22 so as to retain the retroversion component 24 in fixed relation to the proximal component 22. (See, e.g., Appellants' specification at page 9, lines 10-14; page 21, line 16 through page 22, line 2; and Figs. 1-3 and 10-11.) In addition, the modular long bone prosthesis 20 includes a head component 42 having a fifth coupler 46 configured to mate with the first coupler 66 of the proximal component 22 so as to retain the head component 42 in fixed relation to the proximal component 22. (See, e.g., Appellants' specification at page 9, lines 10-14; page 10, lines 16-21; and Figs. 1-3.) One of the proximal component 22 and the retroversion component 24 has a tab 60, and the other one of the proximal component 22 and the retroversion component 24 has a first slot 70 and a second slot 72. (See, e.g., Appellants' specification at page 12,



lines 12-23; and Figs. 1-3 and 7-11.) The proximal component 22 and the retroversion component 24 are configurable between a right long bone mode and a left long bone mode. (See, e.g., Appellants' specification at page 12, lines 12-23; page 11, lines 5-11; and Figs. 2-3.) When in the right long bone mode (i) the second coupler 59 of the proximal component 22 is positioned in mating relationship with the third coupler 82 of the retroversion component 24, (ii) the tab 60 is positioned in the first slot 70, and (iii) no tab is positioned in the second slot 72. (See, e.g., Appellants' specification at page 12, lines 16-20; and Figs 2 and 7-11.) When in the left long bone mode (i) the second coupler 59 of the proximal component 22 is positioned in mating relationship with the third coupler 82 of the retroversion component 24, (ii) the tab 60 is positioned in the second slot 72, and (iii) no tab is positioned in the first slot 70. (See, e.g., Appellants' specification at page 12, lines 20-23; and Figs 3 and 7-11.)

### Claim 23

The modular long bone prosthesis 20 further includes a spacer component 28 having (i) a sixth coupler 150 at a proximal end thereof, the sixth coupler 150 being configured to mate with the fifth coupler 84 of the retroversion component 24 so as to retain the retroversion component 24 in fixed relation to the spacer component 28, and (ii) a seventh coupler 148 at a distal end thereof. (See, e.g., Appellants' specification at page 9, lines 10-22; page 11, line 5 through page 12, line 2; page 21, line 16 through page 22, line 2; page 26, lines 18-20; and Figs 1-3 and 10-12.) The modular long bone prosthesis 20 also includes a distal

component 26 having (i) an eighth coupler 134 at a proximal end thereof, the eighth coupler 134 being configured to mate with the seventh coupler 148 of the spacer component 28, and (ii) a ninth coupler 124, 125 configured to attach to a joint prosthesis component. (See, e.g., Appellants' specification at page 9, lines 10-14; page 25, line 4 through page 26, line 7; and Figs. 1-3, 12, and 9-12.)

#### Claim 24

The proximal component 22, the retroversion component 24, the head component 42, the spacer component 28, and the distal component 26 collectively comprise a humeral prosthesis, and the joint prosthesis component is an ulnar prosthesis component. (See, e.g., Appellants' specification at page 9, lines 4-6 and 17-22; and Figs. 2-3.)

#### Claim 25

The first slot 70 and the second slot 72 are positioned adjacent to each other. (See, e.g., Appellants' specification at page 12, lines 16; and Figs 1-3 and 9.)

#### Claims 26 and 27

The retroversion component 24 defines a central axis 86, and when the retroversion component 24 is viewed in a plan view in a direction defined by the central axis 86 (see Fig. 9), (i) the first slot 70 defines a first slot center point, (ii) the second slot 72 defines a second slot center point, (iii) the first slot center point is offset from the second slot center point by  $\theta^\circ$  along an outside periphery of the retroversion component, and (iv)  $10^\circ \leq \theta \leq 90^\circ$ , wherein  $\theta$  is about  $40^\circ$ . (See, e.g., Appellants' specification at page 22, line 18 through page 23, line 3; and Figs. 9 and 11.)

#### Claims 32-34

Another aspect of Appellants' invention relates to a modular long bone prosthesis 20. (See, e.g., Appellants' specification at page 9, lines 9-10; and Figs. 1-2.) The modular long bone prosthesis 20 includes a proximal component 22 having a first coupler 59. (See, e.g., Appellants' specification at page 9, lines 10-14; page 10, lines 17-19; page 17, lines 10-22; and Figs. 1-3 and 7-8.) The modular long bone prosthesis 20 further includes a retroversion component 24 having a second coupler 82 being configured to mate with said first coupler 59 of

said proximal component 22 so as to retain said retroversion component 24 in fixed relation to said proximal component 22. (See, e.g., Appellants' specification at page 9, lines 10-14; page 21, line 16 through page 22, line 2; and Figs. 1-3 and 10-11.) One of said proximal component 22 and said retroversion component 24 has a tab 60, and the other one of said proximal component 22 and said retroversion component 24 has a first slot 70 and a second slot 72. (See, e.g., Appellants' specification at page 12, lines 12-23; and Figs. 1-3 and 7-11.) The proximal component 22 and said retroversion component 24 are configurable between a right long bone mode and a left long bone mode. (See, e.g., Appellants' specification at page 12, lines 12-23; page 11, lines 5-11; and Figs. 2-3.) When in said right long bone mode (i) said first coupler 59 of said proximal component 22 is positioned in mating relationship with said second coupler 82 of said retroversion component 24, (ii) said tab 60 is positioned in said first slot 70, and (iii) no tab is positioned in said second slot 72. (See, e.g., Appellants' specification at page 12, lines 16-20; and Figs 2 and 7-11.) When in said left long bone mode (i) said first coupler 59 of said proximal component 22 is positioned in mating relationship with said second coupler 82 of said retroversion component 24, (ii) said tab 60 is positioned in said second slot 72, and (iii) no tab is positioned in said first slot 70. (See, e.g., Appellants' specification at page 12, lines 20-23; and Figs 3 and 7-11.) The first slot 70 and said second slot 72 are positioned adjacent to each other. (See, e.g., Appellants' specification at page 12, lines 16; and Figs 1-3 and 9.) The retroversion component 24 defines a central axis 86, and when said retroversion component 24 is viewed in a plan

view in a direction defined by said central axis (see Fig. 9), (i) said first slot 70 defines a first slot center point, (ii) said second slot 72 defines a second slot center point, (iii) said first slot center point is offset from said second slot center point by  $\theta^\circ$  along an outside periphery of said retroversion component, and (iv)  $10^\circ \leq \theta \leq 90^\circ$ , wherein  $\theta$  is about  $40^\circ$ . (See, e.g., Appellants' specification at page 22, line 18 through page 23, line 3; and Figs. 9 and 11.)

## **(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

Claims 21 and 23-27 stand rejected under 35 U.S.C. § 112, second paragraph.

Claims 21, 25-27, and 32-34 stand rejected under 35 U.S.C. § 102 as being anticipated by Hickey (U.S. Patent No. 5,645,607).

Claim 32 stands rejected under 35 U.S.C. § 102 as being anticipated by Gray, Jr. et al. (U.S. Patent No. 6,149,687).

Claims 21 and 26 stand rejected under 35 U.S.C. § 103 as being unpatentable over Gray, Jr. et al. (U.S. Patent No. 6,149,687).

## **(7) ARGUMENT**

### **I. Rejection under 35 U.S.C. § 112**

#### **Claims 21 and 23-27 are not indefinite under 35 U.S.C. § 112, second paragraph**

In support of the 35 U.S.C. § 112 rejection directed at claims 21 and 28 set forth on page 2 of the Final Office Action dated January 19, 2006, the Examiner stated the following:

[r]egarding at least claims 21 and 28, applicant is purposely confusing the couplers terminology. The coupler names are not consistent [and] not supported.

Applicants do not desire to present “confusing” terminology in either claim 21 or claim 28. Moreover, the various “coupler” limitations recited in claims 21 and 28 comport with the requirements of 35 U.S.C. § 112. The second paragraph of 35 U.S.C. § 112 states that “[t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter *which the applicant regards as his invention.*” (Emphasis added.) In claims 21-27, Applicants used the descriptor terms “first”, “second”, etc. in association with various “couplers” to distinguish among the couplers of claims 21-27 so as to provide proper antecedent basis in claims 21-27. However, Appellants have chosen to define their invention of claim 28 with fewer limitations than that of claim 21, and thus fewer couplers were recited in claim 28 than in claim 21. In claims 28-34, Applicants used the descriptor terms “first”, “second”, etc. in association with various “couplers” to distinguish among the couplers of

claims 28-34 so as to provide proper antecedent basis in claims 28-34. The descriptor terms “first”, “second”, etc are used consistently among claims 21-27, and the descriptor terms “first”, “second”, etc are used consistently among claims 28-34. Since claims 21 and 28 are different independent claims, the “first coupler”, the “second coupler”, etc. of claim 21 do not necessarily have to be supported by the same couplers in the patent specification as the “first coupler”, the “second coupler”, etc. of claim 28 in order to comport with 35 U.S.C. § 112.

Support for the various coupler terms used in claim 21 and claim 28 are set forth above in the section entitled SUMMARY OF CLAIMED SUBJECT MATTER.

### *Conclusion*

Accordingly, claims 21, 23-27, and 32-34 comply with 35 U.S.C. § 112, and the Board of Appeals is respectfully requested to reverse this rejection of the claims.



**II. Rejection under 35 U.S.C. § 102 based on Hickey (U.S. Patent No. 5,645,607)**

**Claims 21, 25-27, and 32-34 are Not Unpatentable over Hickey (U.S. Patent No. 5,645,607)**

Discussion Re: Patentability of Claim 21

*Claim 21*

Claim 21 recites the following limitations:

wherein when in said right long bone mode (i) said second coupler of said proximal component is positioned in mating relationship with said third coupler of said retroversion component, (ii) said tab is positioned in said first slot, and (iii) no tab is positioned in said second slot, and

wherein when in said left long bone mode (i) said second coupler of said proximal component is positioned in mating relationship with said third coupler of said retroversion component, (ii) said tab is positioned in said second slot, and (iii) no tab is positioned in said first slot.

In the January 19, 2006 Final Office Action (see pages 4-5), the examiner never set forth any teaching of Hickey that discloses these limitations, nor does one appear to exist in Hickey. Indeed, the examiner equated the claimed tab with Hickey's flange 48, and the claimed first and second slots with two of Hickey's channels 39. However, in Hickey, there is never a first mode when the particular flange 48 is positioned in a first channel 39, and no tab is positioned in a second channel 39, and a second mode when the particular flange 48 is positioned in the second channel 39, and no tab is positioned in the first channel 39. Rather, when the particular flange 48 is positioned in the second channel 39, the other flange of the neck component (equated with the claimed proximal component) will be positioned in the first channel 39. Thus, the language of claim 21 is not met by Hickey. It is axiomatic that anticipation of a claim under 35

U.S.C. § 102 is proper only if the prior art reference discloses each and every element of the claim. Since Hickey does not teach each and every element of Appellants' claim 21, such claim is not anticipated by Hickey. Accordingly, the Board of Appeals is respectfully requested to reverse this rejection of claim 21.

#### Discussion Re: Patentability of Claims 25-27

Each of claims 25-27 depends directly or indirectly from claim 21. As a result, each of claims 25-27 is allowable for the reasons hereinbefore discussed with regard to claim 21.

#### Discussion Re: Patentability of Claim 32-34

Each of claims 32-34 depends directly or indirectly from claim 28 and therefore incorporates all the limitations of claim 28. Thus, each of claims 32-34 indirectly includes the following limitations:

wherein when in said right long bone mode (i) said first coupler of said proximal component is positioned in mating relationship with said second coupler of said retroversion component, (ii) said tab is positioned in said first slot, and (iii) no tab is positioned in said second slot, and

wherein when in said left long bone mode (i) said first coupler of said proximal component is positioned in mating relationship with said second coupler of said retroversion component, (ii) said tab is positioned in said second slot, and (iii) no tab is positioned in said first slot.

As discussed above with respect to claim 21, in Hickey there is never a first mode when the particular flange 48 is positioned in a first channel 39, and no tab is positioned in a second channel 39, and a second mode when the particular flange 48 is positioned in the second channel 39, and no tab is positioned in the first channel 39. Since Hickey does not teach each and every element of

Appellants' claims 32-34, such claims are not anticipated by Hickey. Accordingly, the Board of Appeals is respectfully requested to reverse this rejection of claims 32-34.

**III. Rejection under 35 U.S.C. § 102 based on Gray, Jr. et al. (U.S. Patent No. 6,149,687)**

**Claim 32 is Not Unpatentable over Gray, Jr. et al. (U.S. Patent No. 6,149,687)**

Claim 32 depends from claim 28 and further recites the following limitation:

wherein said first slot and said second slot are positioned adjacent to each other.

In the January 19, 2006 Final Office Action (see page 5), the examiner failed to identify any teaching in Gray that discloses this limitation, nor does one appear to exist. Presumably, the Examiner is equating Gray's slots 46 and 48 with the claimed first and second slots of claim 32. However, the slots 46 and 48 are not "positioned adjacent to each other" as called for in claim 32. Rather, Gray's first slot 46 is offset from its second slot 48 by 180° along the outside periphery of component in which the slots 46, 48 are defined. Positioning two slots 180° apart from each other is the antithesis of being adjacent to each other. Moreover, a threaded recess configured to receive a threaded member is interposed between the slots 46 and 48. Thus, the limitations of claim 32 are not met by Gray. It is axiomatic that anticipation of a claim under 35 U.S.C. § 102 is proper only if the prior art reference discloses each and every element of the claim. Since Gray does not teach each and every element of Appellants' claim 32, such claim is not anticipated by Gray. Accordingly, the Board of Appeals is respectfully requested to reverse this rejection of claim 32.

**IV. Rejection under 35 U.S.C. § 103 over Gray, Jr. et al. (U.S. Patent No. 6,149,687)**

**Claims 21 and 26 are Not Unpatentable over Gray, Jr. et al. (U.S. Patent No. 4,865,609)**

Discussion Re: Patentability of Claim 21

*Claim 21*

Claim 21 recites the following limitation:

a head component having a fifth coupler configured to mate with the first coupler of said proximal component so as to retain said head component in fixed relation to said proximal component.

*Proposed Modification of Gray, Jr. et al.*

In the January 19, 2006 Final Office Action (see page 7), the examiner stated the following:

[i]t would have been obvious to one having skill in the art to include a head component (insert or articulating component) and a coupling means ... .

Presumably, the proposed modification is to modify the proximal tibial trial system 10 of Gray so that a head component (and associated coupling means) is attached its trial base plate 32.

*There Does Not Appear to Exist a Teaching, Suggestion or Incentive in the Prior Art which Supports the Proposed Modification of Gray, Jr. et al.*

Obviousness cannot be established by modifying the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the modification.

A legally proper teaching, suggestion or incentive which supports modifying Gray, Jr. et al. in a manner which arrives at the invention of claim 21 has not been identified in the January 19, 2006 Final Office Action, nor does one appear to exist. The only comments in the Final Office Action which appear to identify any type of support for the proposed modification of Gray are set forth below:

Page 7, line 8

"such that the system could be fully sized and trialed.

One skilled in the art would not be motivated to attach a head component to the trial base plate 32 of the proximal tibial trial system since proximal tibial trial systems normally are not configured to receive a head component. Note that a *head component*, as that term is understood in the art of orthopaedics, is a head-shaped (or convex) prosthetic component that simulates the head of a bone such as the head of a femur or the head of a humerus. In contrast, the natural proximal tibia is configured with two superior articulating surfaces (i.e. a lateral facet and a medial facet) that are *concave*, not convex.

Moreover, the proximal tibial trial system 10 of Gray appears to be completely functional as disclosed and does not suggest or imply that any component, much less, a head component needs to be attached to it so that "the system could be fully sized and trialed."

Accordingly, Gray, Jr. et al. does not provide the necessary teaching, suggestion, or incentive to make the proposed modification to its proximal tibial trial system 10 so as to arrive at the invention of claim 21. Nor has the Examiner

identified any legitimate teaching, suggestion, or incentive that supports modifying Gray, Jr. et al. in the proposed manner. Thus, a prima facie case of obviousness under 35 U.S.C. § 103 has not been established with respect to claim 21. Consequently, the Board of Appeals is respectfully requested to reverse the rejection of claim 21.

#### Discussion re: Patentability of Claim 26

Claim 26 depends directly from claim 21. As a result, claim 26 is allowable for, at least, the reasons hereinbefore discussed with regard to claim 21.

Moreover, claim 26 further recites the following:

said retroversion component defines a central axis, and when said retroversion component is viewed in a plan view in a direction defined by said central axis, (i) said first slot defines a first slot center point, (ii) said second slot defines a second slot center point, (iii) said first slot center point is offset from said second slot center point by  $\theta^\circ$  along an outside periphery of said retroversion component, and (iv)  $10^\circ \leq \theta \leq 90^\circ$ .

The components of Gray's proximal tibial trial system 10 does possess these claimed features. Indeed, the center point of the first slot 46 and the center point of the second slot 48 are offset by  $180^\circ$  along the outside periphery of the component in which the slots 46, 48 are defined. (See, e.g., Gray at column 3, lines 27-34.) Thus, the proposed modification of Gray does not arrive at the invention of claim 26. Accordingly, a prima facie case of obviousness under 35 U.S.C. § 103 has further not been established with respect to the invention defined by claim 26. Thus, the Board of Appeals is respectfully requested to reverse the rejection of claim 26.

## **V. Conclusion**

Claims 21 and 23-27 are not unpatentable under 35 U.S.C. § 112, second paragraph, and the Board of Appeals is respectfully requested to reverse this rejection of these claims.

Claims 21, 25-27, and 32-34 are not unpatentable under 35 U.S.C. § 102 as being anticipated by Hickey (U.S. Patent No. 5,645,607), and the Board of Appeals is respectfully requested to reverse this rejection of these claims.

Claim 32 is not unpatentable under 35 U.S.C. § 102 as being anticipated by Gray, Jr. et al. (U.S. Patent No. 6,149,687), and the Board of Appeals is respectfully requested to reverse this rejection of this claim.

Claims 21 and 26 are not unpatentable under 35 U.S.C. § 103 as being unpatentable over Gray, Jr. et al. (U.S. Patent No. 6,149,687), and the Board of Appeals is respectfully requested to reverse this rejection of these claims.

Respectfully submitted,  
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## **(8) CLAIM APPENDIX**

12. A modular long bone prosthesis system for replacing all or a portion of a long bone having a head and neck at its proximal end and a pivot axis about which the bone with which the long bone articulates pivots at the distal end, the system comprising:

a proximal component configured to replace the neck of the long bone and to receive a component for replacing the head at a proximal end, a distal component configured at its distal end to include a pivot axis about which the bone with which the long bone articulates may pivot, a retroversion component, a spacer component, and a stem component and wherein:

the proximal component is configured on its distal end to mount to one of the retroversion component, the stem component and the spacer component;

the distal component is configured on its proximal end to mount to one of the retroversion component, the stem component and the spacer component;

the retroversion component is configured to mount at one end to one of the distal component and the spacer component and at the other end to one of the proximal component and the spacer component;

the spacer component is configured at one end to mount to one of the distal component and the proximal component and at the other end to mount to one of the retroversion component and the stem component;

the stem component is configured at one end to couple to one of the distal component, the proximal component and the spacer component and configured at the other end to be received in the intramedullary canal of the long bone; and

wherein the proximal component, distal component and retroversion component when coupled form a total long bone prosthesis exhibiting a retroversion angle found in the long bone, the proximal and stem components when coupled form a proximal prosthesis, and the distal and stem components when coupled form a distal prosthesis;

wherein the proximal component, distal component and retroversion component when coupled in a first configuration form a right total long bone prosthesis and when coupled in a second configuration form a left total long bone prosthesis;

wherein the spacer segment when coupled between the proximal and distal components of the total long bone prosthesis forms a longer total long bone prosthesis;

further comprising a plurality of spacer components each having a differing length and configured at one end to mount to one of the distal component and the proximal component and at the other end to mount to one of the retroversion component and the stem component;

and further comprising a second stem component and an intercalary component configured at both ends to mount to one of a stem component and a spacer component and the intercalary component first stem component and second stem component when coupled form an intercalary prosthesis.

13. A modular long bone prosthesis system for replacing all or a portion of a long bone having a head and neck at its proximal end and a pivot axis about which the bone with which the long bone articulates pivots at the distal end, the system comprising:

a proximal component configured to replace the neck of the long bone and to receive a component for replacing the head at a proximal end, a distal component configured at its distal end to include a pivot axis about which the bone with which the long bone articulates may pivot, a retroversion component, a spacer component, and a stem component and wherein:

the proximal component is configured on its distal end to mount to one of the retroversion component, the stem component and the spacer component;

the distal component is configured on its proximal end to mount to one of the retroversion component, the stem component and the spacer component;

the retroversion component is configured to mount at one end to one of the distal component and the spacer component and at the other end to one of the proximal component and the spacer component;

the spacer component is configured at one end to mount to one of the distal component and the proximal component and at the other end to mount to one of the retroversion component and the stem component;

the stem component is configured at one end to couple to one of the distal component, the proximal component and the spacer component and configured at the other end to be received in the intramedullary canal of the long bone; and

wherein the proximal component, distal component and retroversion component when coupled form a total long bone prosthesis exhibiting a retroversion angle found in the long bone, the proximal and stem components when coupled form a proximal prosthesis, and the distal and stem components when coupled form a distal prosthesis,

wherein the spacer component is formed to include a suture attachment location for attachment of a ligament of a muscle to the prosthesis.

17. A modular humeral prosthesis system for replacing all or a proximal part of either a right or left human humerus having a head forming a retroversion angle with the pivot axis of the forearm, the system comprising:

a proximal component configured to replace the neck of the humerus and to receive a component for replacing the head of the humerus at a proximal end, a distal component configured at its distal end to include a pivot axis about which the forearm pivots, a retroversion component, a plurality of spacer components, and a stem component, wherein:

the proximal component is configured on its distal end to mount to one of the retroversion component, the stem component and one of the plurality of the spacer components;

the distal component is configured on its proximal end to mount to one of the retroversion component, the stem component and one of the plurality of the spacer components;

the retroversion component is configured to mount at one end to one of the distal component and one of the plurality of the spacer components and at the other end to one of the proximal component and one of the plurality of the spacer components;

each spacer component is configured at one end to mount to one of the distal component and the proximal component and at the other end to mount to one of the retroversion component and the stem component and one of the plurality of spacer components is longer than the other of the plurality of spacer components;

the stem component is configured at one end to couple to one of the distal component, the proximal component and the spacer component and configured at the other end to be received in the intramedullary canal of the long bone; and

wherein the proximal component, distal component and retroversion component when coupled form a total humeral prosthesis exhibiting a retroversion angle found in the humerus, the proximal and stem components when coupled form a proximal humeral prosthesis, and the distal and stem components when coupled form a distal humeral prosthesis,

wherein when the proximal component, distal component and retroversion component are mounted in a first orientation, a right total humeral prosthesis is formed, and wherein when the proximal component, distal component and retroversion component are mounted in a second orientation, a left total humeral prosthesis is formed,

wherein one of the proximal component and the retroversion component is formed to include an indicator mark and the other of the proximal component and retroversion component is formed to include a first alignment mark and a second alignment mark and wherein when the indicator is aligned with the first alignment mark, the proximal component, distal component and retroversion component are mounted in the first orientation and when the indicator mark is aligned with the second alignment mark the proximal component, distal component and retroversion component are mounted in the second orientation, and

wherein the indicator is a tab and the first alignment mark is a slot.

21. A modular long bone prosthesis, comprising:

a proximal component having a first coupler at a proximal end thereof and a second coupler at a distal end thereof;

a retroversion component having third coupler at a proximal end thereof and a fourth coupler at a distal end thereof, said third coupler being configured to mate with said second coupler of said proximal component so as to retain said retroversion component in fixed relation to said proximal component;

a head component having a fifth coupler configured to mate with the first coupler of said proximal component so as to retain said head component in fixed relation to said proximal component,

wherein said one of said proximal component and said retroversion component has a tab, and

wherein the other one of said proximal component and said retroversion component has a first slot and a second slot,

wherein said proximal component and said retroversion component are configurable between a right long bone mode and a left long bone mode,

wherein when in said right long bone mode (i) said second coupler of said proximal component is positioned in mating relationship with said third coupler of said retroversion component, (ii) said tab is positioned in said first slot, and (iii) no tab is positioned in said second slot, and

wherein when in said left long bone mode (i) said second coupler of said proximal component is positioned in mating relationship with said third coupler of said retroversion component, (ii) said tab is positioned in said second slot, and (iii) no tab is positioned in said first slot.

22. The modular long bone prosthesis of claim 21, further comprising:  
an additional bone component having a sixth coupler configured to mate with said fifth coupler of said retroversion component so as to retain said retroversion component in fixed relation to said additional bone component.

23. The modular long bone prosthesis of claim 21, further comprising:  
a spacer component having (i) a sixth coupler at a proximal end thereof, said sixth coupler being configured to mate with said fifth coupler of said retroversion component so as to retain said retroversion component in fixed relation to said spacer component, and (ii) a seventh coupler at a distal end thereof; and

a distal component having (i) an eighth coupler at a proximal end thereof, said eighth coupler being configured to mate with said seventh coupler of said spacer component, and (ii) a ninth coupler configured to attach to a joint prosthesis component.

24. The modular long bone prosthesis of claim 23, wherein:  
said proximal component, said retroversion component, said head component, said spacer component, and said distal component collectively comprise a humeral prosthesis, and

said joint prosthesis component is an ulnar prosthesis component.

25. The modular long bone prosthesis of claim 21, wherein said first slot and said second slot are positioned adjacent to each other.

26. The modular long bone prosthesis of claim 21, wherein:  
said retroversion component defines a central axis, and  
when said retroversion component is viewed in a plan view in a direction defined by said central axis, (i) said first slot defines a first slot center point, (ii) said second slot defines a second slot center point, (iii) said first slot center point is offset from said second slot center point by  $\theta^\circ$  along an outside periphery of said retroversion component, and (iv)  $10^\circ \leq \theta \leq 90^\circ$ .

27. The modular long bone prosthesis of claim 26, wherein  $\theta$  is about  $40^\circ$ .

28. A modular long bone prosthesis, comprising:

a proximal component having a first coupler;

a retroversion component having second coupler being configured to mate with said first coupler of said proximal component so as to retain said retroversion component in fixed relation to said proximal component;

wherein said one of said proximal component and said retroversion component has a tab, and

wherein the other one of said proximal component and said retroversion component has a first slot and a second slot,

wherein said proximal component and said retroversion component are configurable between a right long bone mode and a left long bone mode,

wherein when in said right long bone mode (i) said first coupler of said proximal component is positioned in mating relationship with said second coupler of said retroversion component, (ii) said tab is positioned in said first slot, and (iii) no tab is positioned in said second slot, and

wherein when in said left long bone mode (i) said first coupler of said proximal component is positioned in mating relationship with said second coupler of said retroversion component, (ii) said tab is positioned in said second slot, and (iii) no tab is positioned in said first slot.



29. The modular long bone prosthesis of claim 28, further comprising an additional bone, wherein:

said retroversion component has a third coupler positioned, and

said additional bone component has a fourth coupler configured to mate with said third coupler of said retroversion component so as to retain said retroversion component in fixed relation to said additional bone component.

30. The modular long bone prosthesis of claim 21, wherein said retroversion component has a third coupler, further comprising:

a spacer component having (i) a fourth coupler configured to mate with said third coupler of said retroversion component so as to retain said retroversion component in fixed relation to said spacer component, and (ii) a fifth coupler; and

a distal component having (i) a sixth coupler configured to mate with said fifth coupler of said spacer component, and (ii) a seventh coupler configured to attach to a joint prosthesis component.

31. The modular long bone prosthesis of claim 30, wherein:  
said proximal component, said retroversion component, said spacer component, and said distal component collectively comprise a humeral prosthesis, and  
said joint prosthesis component is an ulnar prosthesis component.
32. The modular long bone prosthesis of claim 28, wherein said first slot and said second slot are positioned adjacent to each other.
33. The modular long bone prosthesis of claim 28, wherein:  
said retroversion component defines a central axis, and  
when said retroversion component is viewed in a plan view in a direction defined by said central axis, (i) said first slot defines a first slot center point, (ii) said second slot defines a second slot center point, (iii) said first slot center point is offset from said second slot center point by  $\theta^\circ$  along an outside periphery of said retroversion component, and (iv)  $10^\circ \leq \theta \leq 90^\circ$ .
34. The modular long bone prosthesis of claim 33, wherein  $\theta$  is about  $40^\circ$ .

**(9) EVIDENCE APPENDIX**

None.

**(10) RELATED PROCEEDINGS APPENDIX**

None.